

What is claimed is:

1. A rotating fluid machine comprising:

a casing;

a rotor rotatably supported at the casing;

a working part provided at the rotor; and

a rotary valve provided between the casing and the rotor and switching a supply passage and a discharge passage of a working medium for the working part, in which the rotary valve is constructed by making a movable side valve plate provided at the rotor, and a fixed side valve plate supported to float at a valve body portion non-rotatably fixed to the casing, abut to each other on a slide surface orthogonal to an axis,

wherein a pressure chamber into which the working medium is introduced from a passage at a high pressure side out of the supply passage and the discharge passage of the working medium is opened to a mating surface of the valve body portion with the fixed side valve plate, leakage of the working medium from the pressure chamber to the mating surface is sealed by a seal member housed in this pressure chamber, and the fixed side valve plate is pressed toward the slide surface with pressure of the working medium acting on the pressure chamber.

2. The rotating fluid machine according to claim 1, wherein the seal member has a seal lip elastically deformable by softening due to pressure and heat of the working medium.

3. The rotating fluid machine according to claim 1 or 2, further comprising resiliently biasing means for biasing the seal member toward the mating surface.

4. The rotating fluid machine according to claim 3, wherein the resiliently biasing means is a taper coil spring tapering toward the seal member.

5. The rotating fluid machine according to any one of claims 1 to 4, wherein a passage at a low temperature side out of the supply passage and the discharge passage of the working medium is provided in a center of the valve body portion, and an annular pressure chamber is formed to surround a periphery of the passage at the low temperature side.

6. The rotating fluid machine according to any one of claims 1 to 4, wherein the passage at the high pressure side out of the supply passage and the discharge passage of the working medium is provided in a center of the valve body portion, and an annular pressure chamber is formed to surround a periphery of the passage at the high pressure side.

7. The rotating fluid machine according to any one of claims 1 to 4, wherein the seal member has a first seal lip for sealing a space from the mating surface of the fixed side valve plate, and a second seal lip for sealing a space from an inner periphery surface of the pressure chamber.

8. The rotating fluid machine according to any one of claims 1 to 4, wherein the seal member has a first seal lip for sealing a space from the mating surface of the fixed side valve plate, and a second seal lip for sealing a space from an outer periphery

surface of a working medium pipe inserted into the pressure chamber.

9. The rotating fluid machine according to any one of claims 1 to 4, wherein contact pressure of the slide surface is set in accordance with a ratio of an area, in which pressure of the pressure chamber acts on the mating surface, to an area of the slide surface.

10. A rotating fluid machine comprising:

- a casing;

- a rotor rotatably supported at the casing;

- a working part provided at the rotor; and

- a rotary valve provided between the casing and the rotor and controlling supply and discharge of a working medium for the working part, in which the rotary valve has a fixed side valve plate non-rotatably supported to float at a valve body portion fixed at a casing side and a movable side valve plate supported at a rotor side brought into contact with each other on a slide surface orthogonal to an axis;

- a pressure chamber into which the high-pressure working medium is introduced is opened to a mating surface of the valve body portion with the fixed side valve plate;

- leakage of the working medium from the pressure chamber to the mating surface is prevented by a seal member housed in the pressure chamber; and

- the fixed side valve plate and the movable side valve plate are brought into close contact with each other on the slide surface with pressure of the working medium acting on the pressure chamber,

wherein a seal ring for receiving the pressure of the working medium is provided on an outer periphery surface of the seal member, and a space between an inner periphery surface of the pressure chamber and the outer periphery surface of the seal member is sealed by the seal ring.

11. The rotating fluid machine according to claim 10, wherein the seal ring is constructed by a material with resistance to oxidized scale.

12. The rotating fluid machine according to claim 11, wherein the material with the resistance to the oxidized scale is a composite material of metal and carbon, or ceramics.

13. A rotating fluid machine comprising:

a casing;

a rotor rotatably supported at the casing;

a working part provided at the rotor; and

a rotary valve provided between the casing and the rotor and controlling supply and discharge of a working medium for the working part, in which the rotary valve has a fixed side valve plate supported to float to be unable to rotate at a valve body portion fixed at a casing side and a movable side valve plate supported at a rotor side brought into contact with each other on a slide surface orthogonal to an axis;

a pressure chamber into which the high-pressure working medium is introduced is opened to a mating surface of the valve body portion with the fixed side valve plate;

leakage of the working medium from the pressure chamber to the mating surface is prevented by a seal member housed in the pressure chamber; and

the fixed side valve plate and the movable side valve plate are brought into close contact with each other on the slide surface with pressure of the working medium acting on the pressure chamber,

wherein a lip of the seal member and a seat surface of the fixed side valve plate to which the seal member abuts are formed into spherical surfaces each having a center on the axis.

14. The rotating fluid machine according to claim 13, wherein the lip of the seal member is formed into a convex shape, and the seat surface of the fixed side valve plate is formed into a concave shape.

15. A rotating fluid machine comprising:

a casing;

a rotor rotatably supported at the casing;

a working part provided at the rotor; and

a rotary valve provided between the casing and the rotor and controlling supply and discharge of a working medium for the working part, in which the rotary valve has a fixed side valve plate non-rotatably supported to float at a valve body portion fixed at a casing side and a movable side valve plate supported at a rotor side brought into contact with each other on a slide surface orthogonal to an axis;

a pressure chamber into which the high-pressure working medium is introduced is opened to a mating surface of the valve body portion with the fixed side valve plate;

leakage of the working medium from the pressure chamber to the mating surface is prevented by a seal member housed in the pressure chamber; and

the fixed side valve plate and the movable side valve plate are brought into close contact with each other on the slide surface with pressure of the working medium acting on the pressure chamber,

wherein a pressing member for pressing the seal member at least outward in a radial direction is provided at a rear surface of the seal member.

16. The rotating fluid machine according to claim 15, wherein the pressing member presses the seal member with a preload.

17. The rotating fluid machine according to claim 15 or 16, wherein the pressing member is made of metal.